

SECTION 15140
POTABLE WATER PIPING

EDIT TO SUIT PROJECT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Potable cold and hot water piping, valves, fittings and accessories.

1.2 LANL PERFORMED WORK

- A. LANL's support services subcontractor will tie into existing water piping systems.

1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01300:
 - 1. Catalog data on pipe materials, pipe fittings, valves, and accessories.
 - 2. Installation instructions for valves and accessories.

PART 2 PRODUCTS

2.1 PRODUCT SUBSTITUTION

- A. Refer to Section 01630.

2.2 WATER PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Ductile Iron Pipe: AWWA C151.
 - 1. Fittings: AWWA C110, ductile or gray iron.
 - 2. Joints: AWWA C111, bell and spigot with rubber gaskets.
 - 3. Pipe and Fittings: Cement mortar lined with bituminous outside coating.
- B. Copper Tubing: ASTM B88, Type K, hard drawn or annealed.
 - 1. Fittings: ANSI/ASME B16.22, wrought copper and copper alloy solder-joint.
 - 2. Joints: AWS A5.8, BCuP silver braze.
- C. PVC Pipe: AWWA C900, [DR18 (pressure rating 150)] [DR14 (pressure rating 200)]
 - 1. Fittings: AWWA C110, ductile or gray iron, cement mortar lined with bituminous outside coating.
 - 2. Joints: AWWA C11, bell and spigot with rubber gaskets.

2.3 WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Ductile Iron Pipe: AWWA C151.

1. Fittings: AWWA C110, ductile or gray iron.
 2. Joints: AWWA C111, bell and spigot with rubber gaskets.
 3. Pipe and Fittings: Cement mortar lined with bituminous outside coating.
- B. Copper Tubing: ASTM B88, Type K, hard drawn or annealed.
1. Fittings: ANSI/ASME B16.22, wrought copper and copper alloy solder-joint.
 2. Joints: AWS A5.8, BCuP silver braze.
- 2.4 WATER PIPING ABOVE GRADE
- A. Copper Tubing: ASTM B88, Type K, hard drawn or annealed.
1. Fittings: ANSI/ASME B16.22, wrought copper and copper alloy solder-joint.
 2. Joints: ASTM B32, Solder, Grade 95TA.
- 2.5 FLANGES, UNIONS, AND COUPLINGS
- A. Copper Tubing:
1. Class 150 bronze unions with soldered joints.
- B. Mechanical or Push-On Type Pipe, and Fittings Below Grade.
1. Malleable iron retainer gland megalug, UL listed or FM approved with epoxy or asphalt coated tie rods, 1/2 in minimum diameter.
- 2.6 VALVES, ABOVE GRADE
- A. Gate Valves up to 2 inches:
1. Manufacturer: Nibco, Series 111.
 2. MSS SP-80, Class 125 bronze body, bronze trim, rising stem, hand wheel, inside screw, solid wedge disc, solder or threaded ends.
- B. Gate Valves over 2 inches:
1. Manufacturer: Nibco, Series 617-0.
 2. MSS SP-70, Class 150, iron body, bronze trim, outside screw and yoke, hand wheel solid wedge disc, flanged ends. Provide chain wheel operators for valves 6 inches and larger mounted over 8 feet above floor or platform.
- C. Globe valves up to 2 inches:
- A. Manufacturer: Nibco, Series 211.
 - B. MSS SP-80, Class 150 bronze body, bronze trim, hand wheel, bronze disc, solder or threaded ends.
- D. Globe valves over 2 inches:
- A. Manufacturer: Nibco F-7188.

- B. MSS SP-85, Class 125, iron body, bronze trim, hand wheel, outside screw and yoke, renewable bronze plug-type disc, renewable seat, flanged ends.
- E. Ball valves up to 2 inches:
 - A. Manufacturer: Nibco, Series 585-70.
 - B. MSS SP-110, 600 psi CWP, bronze, two piece body, chrome plated brass ball, full port, Teflon seats and stuffing box ring, blowout proof stem, lever handle, solder or threaded ends.
- F. Butterfly valves over 2 inches:
 - 1. Manufacturer: Nibco, Series LD 2000.
 - 2. MSS SP-67, 200 psi CWP, ductile iron body, aluminum bronze disc, resilient replaceable EPDM seat, lug style, extended neck, lever handle, for use between ANSI Class 125/150 flanges.

REFER TO MECHANICAL STANDARD DRAWINGS ST6105 AND ST6108 FOR BELOW GRADE SHUT-OFF VALVE PIPING DETAILS

2.7 VALVES, BELOW GRADE

- A. Gate valves up to 2 inches:
 - 1. Manufacturer: Nibco, Series T174.
 - 2. MSS SP-80, class 300 bronze body, bronze trim, rising stem, hand wheel, inside screw, solid wedge disc, threaded ends.
- B. Gate valves over 2 inches:
 - 1. Manufacturer: Mueller, No. A-2360-20 (no substitution).
 - 2. AWWA C509, UL listed or FM approved, Class 250, nonrising stem, open left, mechanical joint inlet and outlet with mechanical joint unassembled accessories.
- C. Tapping Valves:
 - 1. Manufacturer: Mueller, No. T-2360-16.
 - 2. AWWA C509, UL listed or FM approved, Class 250, resilient wedge, nonrising stem, open left, ANSI Class 125 inlet flange, mechanical joint outlet with mechanical joint accessories.
- D. Gate Valve (Post Indicator):
 - 1. Manufacturer: Mueller, No. P-2360-20 (no substitution).
 - 2. AWWAC509, UL listed or FM approved, Class 250, nonrising stem with post indicator flange, open left, mechanical joint inlet and outlet with mechanical joint accessories.

REFER TO MECHANICAL STANDARD DRAWING ST6122 FOR PRV PIPING DETAILS

2.8 WATER PRESSURE REDUCING VALVES (PRV)

A. PRV-1:

1. Manufacturer: CLA-VAL, No. 90G-01AS.
2. Single seated, hydraulically operated, pilot controlled, diaphragm type valve, 175 psi pressure rating, 180 degree F maximum water temperature and 15 to 75 psi adjustment range. Pilot control shall be direct acting, adjustable, spring loaded, and normally open. Valve construction; cast iron main valve body and cover, brass main valve trim, and cast bronze pilot control with stainless steel trim. All repairs must be done without removing valve from line. Optional features; flow clean strainer and CV flow control (opening speed control).
3. Capacity/Size.
 - a. Flow, [] gpm.
 - b. Valve size, [] inches with female NPT union ends or ANSI class 125 flanged ends.

B. PRV-2:

1. Manufacturer: CLA-VAL, No. 90G-01AB.
2. Single seated, hydraulically operated, pilot controlled, diaphragm type valve, 175 psi pressure rating, 180 degree F maximum water temperature and 15 to 75 psi adjustment range. Pilot control shall be direct acting, adjustable, spring loaded, and normally open. Valve construction; cast iron main valve body and cover, brass main valve trim, and cast bronze pilot control with stainless steel trim. All repairs must be done without removing valve from line. Optional features; flow clean strainer, shutoff cocks to isolate pilot system.
3. Capacity/Size.
 - a. Flow, [] gpm.
 - b. Valve size, [] inches with ANSI class 125 flanged ends.

C. PRV-3:

1. Manufacturer: CLA-VAL, No. 990.
2. Balanced single seat with bronze valve body and cover, stainless steel trim, integral strainer, 175 psi maximum water temperature, and standard adjustment range 8-80 psi. All repairs must be done without removing valve from line.
3. Capacity/Size.
 - a. Flow, [] gpm.
 - b. Size, [] inches with NPT union ends.

2.9 RELIEF VALVES

A. Temperature and Pressure Relief:

1. AGA Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic direct pressure actuated, temperature relief maximum 210 degrees F

capacity, ASME SEC IV certified and labeled.

2.10 STRAINERS

- A. Sizes up to 2 inches:
 - 1. Threaded brass body for 175 psi CSP, Y pattern with 1/32 inch stainless steel perforated screen.
- B. Size over 2 inches:
 - 1. Class 125, flanged iron body, Y pattern with 1/16 inch stainless steel perforated screen.

2.11 HOSE BIB (WALL HYDRANT)

- A. Manufacturer: J.R. Smith Mfg. Co.
- B. ANSI A112.21.3, non-freeze, integral vacuum breaker, bronze or brass [nickel plated], 3/4 inch exposed hose connection, 1/4 turn, T-handle key.
- C. ANSI A112.21.3, non-freeze, integral vacuum breaker, bronze or brass, concealed 3/4 inch hose connection, 1/4 turn, T-handle key, stainless steel box with hinged locking cover.

REFER TO MECHANICAL STANDARD DRAWING ST6110 FOR FIRE HYDRANT PIPING DETAIL.

2.12 FIRE HYDRANTS

- A. Manufacturer: Mueller, Super Centurion, No. A436, no substitution.
- B. UL listed or FM approved, dry barrel, 5 1/4 inch main valve opening, 3-way with 4 1/2 inch pumper nozzle and two 2 1/2 inch hose nozzles, ground level break flange, and mechanical joint inlet connection. Hydrant factory painted yellow.

REFER TO MECHANICAL STANDARD DRAWING ST6108 FOR PIV PIPING DETAIL.

2.13 POST INDICATORS

- A. Manufacturer: Mueller, No. A20801, no substitution.
- B. UL listed or FM approved, adjustable type, open left.

REFER TO MECHANICAL STANDARD DRAWING ST6100 FOR BFP PIPING DETAIL..

2.14 BACKFLOW PREVENTERS (BFP)

- A. BFP-1:
 - 1. Manufacturer: Hersey Model FRP 11, no substitution.
 - 2. Bronze body, reduce pressure type, with ball type shut-off valves, test cocks for

in-line field testing, integral unions and an air gap drain funnel. Maximum water temperature range 33-210 degrees F, maximum rated working pressure 150 psi.

3. Size, [] inches.

B. BFP-2:

1. Manufacturer: Hersey Model 6CM, no substitution.

2. Cast iron body, hot dipped galvanized, reduced pressure type, with OS & Y shut-off valves, test cocks for in-line field testing, and an air gap drain funnel. Maximum water temperature range 33-140 degrees F, maximum rated working pressure 175 psi.

3. Size, [] inches.

REFER TO MECHANICAL STANDARD DRAWING ST6105 FOR TIE-IN (HOT TAP) DETAILS.

2.15 PRESSURE GAUGE

A. Manufacturer: Reotemp Instruments.

B. ANSI B40.1, 1 percent accuracy, minimum 2 1/2 inch dial, phenolic or black painted steel case, phosphor bronze bourden tube and 1/4 inch NPT brass bottom connection.

2.16 SERVICE SADDLE

A. Manufacturer: Mueller, DE25-IP Series.

B. Ductile iron, stainless steel strap, iron pipe outlet thread, and o-ring gasket.

REFER TO MECHANICAL STANDARD DRAWING ST6109 FOR TRACER WIRE TEST BOX DETAIL.

2.17 TEST BOX

1. Manufacturer: Glen, 2 terminal box.

2. Plastic construction with a magnetic top.

2.18 TAPPING SLEEVE

A. Manufacturer: Romac Industries, No. FTS 419, no substitution.

B. Fabricated steel, ANSI class 150 outlet flange, suitable for PVC, steel, ductile iron, and cast iron pipe, outlet flange size and sleeve O.D. to suit piping system.

2.19 COUPLING

A. Manufacturer: Dresser, Style 38 for steel pipe, and style 138 for cast iron pipe.

B. Steel, size suitable for pipe line material and diameter.

2.20 VALVE BOX

- A. Manufacturer: Tyler, Series 6860.
- B. Cast iron, 5 1/4 inch shaft screw type, lid marked "water".

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not install underground piping when bedding is wet or frozen.
- B. Verify that excavations are to required grade.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.

33 TIE-INS

- A. Tie-ins to existing systems shall be coordinated with and performed by LANL's support services subcontractor. Contractor shall provide materials required for tin-in and perform necessary excavation and work to prepare area.

REFER TO CIVIL STANDARD DRAWING ST3211 FOR TRENCHING DETAIL.

3.4 WATER LINE COVER

- A. Provide cover, bedding, warning tape, and [tracing wire] per trench details and below grade piping details. Refer to Section 02225, Trenching.

3.5 INSTALLATION

- A. Comply with Uniform Plumbing Code, latest edition.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls
- D. Install piping to maintain headroom and neither interfere with use of space nor take more space than necessary.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide access where valves and other equipment are not exposed. See Section [08310].
- H. Install valves with stems upright or horizontal, not inverted.
- I. Sleeve and caulk pipes passing through partitions, walls and floors. See Section [15060].

- J. Pipe relief from valves, back-flow preventers and drains to nearest floor drain.
- K. Slope water piping and arrange to drain at low points.
- L. Disinfect water distribution system in accordance with Section 15470.
- M. Pressure test piping system in accordance with Section 15992.
- N. Label piping system in accordance with Section 15190.
- O. Insulate piping system in accordance with Section 15250.
- P. Support piping system in accordance with Section [15060].
- Q. Seal openings around pipe in fire-rated walls or floors with UL-approved fire retardant mastic.
- R. Paint exposed piping in occupied spacing to match background color.
- S. Install chrome-plated steel excutcheons for uninsulated pipes at finished surfaces.
- T. Provide stops on waterlines for all plumbing fixtures.

END OF SECTION